CLAIMS

1. A compound comprising a gonadotrophin releasing hormone (GnRH) analogue conjugated to a hormone moiety, or a derivative thereof, which is able to bind to a plasma hormone binding protein.

2. A compound according to Claim 1 wherein the GnRH analogue is a peptide analogue.

3. A compound according to Claim 2 wherein the GnRH analogue is a nonapeptide or a decapeptide.

4. A compound according to any of the preceding claims wherein one of the amino acid residues of the GnRH analogue is a D-amino acid.

5. A compound according to any of the preceding claims wherein the D-amino acid is D-Lys.

6. A compound according to any of Claims 4 or 5 wherein the D-amino acid is at position 6.

7 A compound according to any of Claims 1 to 6 wherein the GnRH analogue is a GnRH antagonist.

8. A compound according to Claim 7 wherein the GnRH antagonist is [AcD-Nal^1,D-Cpa^2, D-Pal^3,Arg^5, D-Lys^6,D-Ala^{10}]GnRH, or [Ac-ΔPro^1,D-Fpa^2,D-Trp^3,D-Lys^6]GnRH.

9. A compound according to Claim 7 wherein the GnRH antagonist is Cetrorelix, Ganirelix, Abarelix, Antide, Teverelix, FE200486, Na-Glu, A-

75998, A-76154, A-84861, D-26344, D-63153, D21775, ramorelix, degarelix, NBI-42902, Org-30850, detirelix, iturelix, TAK-013, TAK810, AN 207, AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Leu-Arg-Pro-D-Ala-NH_2; Ac-ΔPro-D-Fpa-D-Trp-Ser-Tyr-D-Lys-Leu-Arg-Pro-Gly-NH_2; AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Lys-Leu-Arg-D-Ala-NH_2; D-Pal-Ser-Arg-D-Lys-Leu-Arg-Pro-D-Ala-NH_2; AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Lys-Arg-Pro-D-Ala-NH_2; [D-Pyr^1,D-Phe^2,D-Trp^{3-6}]GnRH; D-Lys^6Antide; Lys^5 Antide or Lys^8 Antide.

10. A compound according to any of Claims 1-6 wherein the GnRH analogue is a GnRH agonist.

11. A compound according to Claim 10 wherein the GnRH agonist is pGlu-His-Trp-Ser-Tyr-D-lys-Leu-Arg-Pro-GlyNH_2, Lupron, Zoladex, Supprelin, Synarel, Triptorelin, Buserelin, leuprolide, goserelin, deslorelin, ProMaxx-100, avorelin, histrelin, nafarelin, leuprorelin or triptorelin.

12. A compound according to any of the preceding claims wherein the hormone moiety is a steroid hormone moiety.

13. A compound according to Claim 12 wherein the steroid hormone moiety is estradiol, progesterone, cortisol, corticosterone, estrone, testosterone or dihydroxytestosterone.

14. A compound according to Claim 13 wherein the progesterone derivative is 11α-hydroxyprogesterone or 21-hydroxyprogesterone.

15. A compound according to any of the preceding claims wherein the compound retains the *in vivo* hormonal activity of the hormone moiety or derivative thereof.

16. A compound according to any of Claims 1-14 wherein the compound has no *in vivo* hormonal activity of the hormone moiety or derivative thereof.

17. A compound according to any of the preceding claims wherein the hormone moiety binds to a plasma hormone binding protein *in vivo*.

18. A compound according to any of the preceding claims wherein the hormone binding protein is a globulin.

19. A compound according to Claim 18 wherein the plasma hormone binding protein is cortisol binding globulin (CBG), sex hormone binding globulin (SHBG), or progesterone binding globulin (PBG) or albumin.

20. A compound according to any of Claims 1-19 wherein the conjugated GnRH analogue and the hormone moiety are cleavable.

21. A compound according to any of Claims 1-19 wherein the GnRH analogue and the hormone moiety are directly conjugated.

22. A compound according to any of Claims 1-20 wherein the GnRH analogue and the hormone moiety are conjugated via a linking group.

23. A compound according to Claim 22 wherein the linker is a succinate linker or a derivative thereof.

24. A compound according to any of the preceding claims wherein the GnRH analogue has a D-lysine residue, and the GnRH analogue is conjugated to the hormone moiety via the D-lysine.

25. A compound according to any of the preceding claims which has a longer half-life *in vivo* than native GnRH.

26. A compound according to any of the preceding claims which has a longer duration of activity *in vivo* than native GnRH.

27. A compound according to Claim 1 having the formula shown in Figure 1A or 1B.

28. A compound according to Claim 1 which is:

AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Leu-Arg-Pro-D-Ala-NH_2 conjugated to 21-hydroxyprogesterone 21-succinate at the ε amine of D-Lys at position 6;

Ac-ΔPro-D-Fpa-D-Trp-Ser-Tyr-D-Lys-Leu-Arg-Pro-Gly-NH_2 conjugated to 21-hydroxyprogesterone 21-succinate at the ε amine of D-Lys at position 6;

AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Lys-Leu-Arg-D-Ala-NH_2 conjugated to 21-hydroxyprogesterone 21-succinate at the ε amine of Lys at position 7;

D-Pal-Ser-Arg-D-Lys-Leu-Arg-Pro-D-Ala-NH_2 conjugated to 21-hydroxyprogesterone 21-succinate at the N-terminal amine of D-Pal;

AcD-Nal-D-Cpa-D-Pal-Ser-Arg-D-Lys-Lys-Arg-Pro-D-Ala-NH_2 conjugated to 21-hydroxyprogesterone 21-succinate at the ε amine of Lys at position 7; or

[DLys^6]GnRH conjugated to 11α-hydroxyprogesterone 11-succinate at the ε amine group of the D-Lys at position 6.

29. A compound according to any of the preceding claims which is bound to a plasma hormone binding protein.

30. A compound according to Claim 29 wherein the plasma hormone binding protein is CBG, SHBG, or albumin.

31. A pharmaceutical composition comprising a compound according to any of Claims 1-30 and a pharmaceutically acceptable excipient, carrier or diluent.

32. A pharmaceutical composition according to Claim 31 which is suitable for oral administration.

33. A pharmaceutical composition according to Claim 31 which is a slow-release formulation.

34. A compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, for use in medicine.

35. A method of reducing the fertility of an individual comprising administering a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, to the individual.

36. Use of a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, in the preparation of a medicament for reducing the fertility of an individual.

37. A method of combating a hormone-dependent disease or condition comprising administering a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, to an individual in need thereof.

38. Use of a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, in the preparation of a medicament for combating a hormone-dependent disease or condition in an individual in need thereof.

39. A method according to Claim 37 or a use according to Claim 38 wherein the hormone-dependent disease or condition is selected from a hormone-dependent cancer, benign prostatic hypertrophy, endometriosis, uterine fibroids, premenstrual syndrome, polycystic ovarian syndrome, hirsutism, acne vulgaris, precocious puberty, acute intermittent porphyria, cryptoorchidism and delayed puberty.

40. A method or a use according to Claim 39 wherein the hormone-dependent cancer is breast cancer, prostate cancer, uterine cancer or endometrial cancer.

41. A method of combating infertility comprising administering a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, to an individual in need thereof.

42. Use of a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, in the preparation of a medicament for combating infertility in an individual in need thereof.

43. A method of modulating the production of gonadotrophins or sex hormones *in vivo* comprising administering a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, to an individual.

44. Use of a compound according to any of Claims 1-30, or a pharmaceutical composition according to any of Claims 31-33, in the preparation of a medicament for modulating the production of gonadotrophins or sex hormones *in vivo*.

45. A method of modifying a GnRH analogue so that it has an increased *in vivo* half-life compared to GnRH, the method comprising conjugating the GnRH analogue to a hormone moiety, or a derivative thereof, which is able to bind to a plasma hormone binding protein.

46. A method of modifying a GnRH analogue so that it has an increased duration of activity *in vivo* compared to GnRH, the method comprising conjugating the GnRH analogue to a hormone moiety, or a derivative thereof, which is able to bind to a plasma hormone binding protein.

47. A method according to Claim 45 or 46 wherein the conjugating step comprises conjugating the GnRH analogue and the hormone moiety or derivative thereof via a linking group.

48. A method according to Claim 45, 46 or 47 further comprising binding the hormone moiety or derivative thereof to a plasma hormone binding protein.

49. A method according to Claim 48 wherein the plasma hormone binding protein is CBG, SHBG, or albumin.

50. A method according to any of Claims 46-59 further comprising determining the *in vivo* half-life or duration of activity of the conjugated GnRH analogue.

51. A method according to Claim 50 further comprising comparing the *in vivo* half-life or duration of activity of the conjugated GnRH analogue with the *in vivo* half-life or duration of activity of GnRH to identify a GnRH analogue having an increased *in vivo* half-life or duration of activity compared to GnRH.